

**SIE 340: Deterministic Operations Research  
SUMMER 2023**

## **Instructor Contact Information**

Masoud Eshghali ( masoudeshghali@arizona.edu)  
Office Hours : Monday, Wednesday 4pm-5pm via Zoom only (or in-person by appointment)  
Meeting ID: 679 558 6644

## **Teaching Assistants Contact Information**

To be announced.

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## **Time and Location**

Mon, Tue, Wen, Thu, Fri 11:00AM - 12:45PM  
Location: ENGR, Room 301

## **Class Recordings**

The class will be recorded using Panopto and it will be uploaded on D2L website. If you have any questions or concerns about the recording, please contact the instructor.  
For lecture recordings, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension or civil action.

## **Course Format and Course Website:**

This course will be delivered in-person.

You need to check <https://d2l.arizona.edu> at least once per day for lecture notes, homework assignments, supplemental readings, grades, etc.

## Course Description

Student will learn to formulate linear programs and learn solution strategies such as the simplex method. Duality and sensitivity analysis also will be covered.

## Course Prerequisites

SIE 265 - Engineering Management, and SIE 270 - Mathematical Foundations of Systems and Industrial Engineering, or equivalent knowledge of linear algebra (systems of linear equations, matrix methods for systems of linear equations).

## Learning Outcomes

- Apply analytical skills to develop an appropriate linear programming model
- Demonstrate an ability to choose an appropriate solution technique
- Extract relevant information from the model and solution

## Required Textbook (One of the following):

- Wayne L. Winston, Operations Research: Applications and Algorithms, ISBN-10: 0534380581, Cengage Learning; 4 edition, 2003.
  - Winston, W. L. and Venkataramanan, M., Introduction to Mathematical Programming, ISBN: 0-534-35964-7, Edition: 4, Publisher: ITP EDUC/THOMSON LEARNING.
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## Grading Scale and Policies

**Homework (25%):** 5 times

- The main purpose of the homework assignments is to help you practice the skills needed to meet the learning outcomes for this course.
- Homework assignments and due time will be posted in the Assignments section on D2L. Homework must be turned on time. Late turned in homework will receive a zero grade.

**Notice:** I expect you to understand and write your own solutions, but you are allowed to discuss with your classmates. Also, if you have any references, you must cite them.

**Quiz (15%):** Every day we have a quiz consisting of a fairly simple question from the recent lecture.

- Two main purposes of the quizzes are (i) to help students to have a better idea of how well they are grasping the material (ii) encourage participation in the class.
- Quizzes will be held during the class time everyday. Taking 60% of quizzes is required to achieve the full score, but If you take more than that, you will get extra points

**Midterm exam (25%):** Monday, June 19, 11:00AM - 12:45PM in our regular classroom. The exams will be based on the material covered during lectures, homework assignments, and the materials on D2L Content.

**Final exam (35%):** Final exam is on Friday, July 7, 11:00AM - 12:45PM in our regular classroom and its format is similar to midterm exams.

**Regrading:** If you feel that an error has been made in grading your assignment, you may request a regrade in a written form outlining the potential error and submitted to the instructor via email within one week of it being returned (please attach the scanned copy of homework/exam). This timetable will be strictly adhered to. The TAs are not going to accept the regrade request.

**Final grade:** The final letter grade will be distributed as follows: A: 90-100; B: 80-89.9; C: 70-79.9; D: 60- 69.9; E: 59.9. Requests for incompletes (I) and withdrawal (W) must be made in accordance with university policies.

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## Guide to Success:

1. Spend 5 minutes before each class to preview what we are about to learn.
  2. Come to class and take notes by hand.
  3. Use the textbook to read more examples and details about each topic.
  4. Do homework without using solved examples as a guide.
  5. Teach material to a real or imagined audience. In trying to explain concepts in a way that others can understand, you become aware of the details that are not entirely clear.
  6. Go to office hours. Office hours are for any students who want to talk to the professor about Homework, Classwork, Learning Strategies, Research Opportunities and Career Goals.
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## Scheduled Topics:

1. Introduction to Mathematical Modeling and Review of Linear Algebra

2. Solving Linear Programming (LP) Problems (Graphical solutions and Simplex Algorithm)
  3. Sensitivity Analysis and Duality
  4. (if time permits) Transportation, Assignment, Network Flow Problems, and Integer Programming
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## **Absence and Class Participation Policy**

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Absences may affect a student's final course grade. If you anticipate being absent, are unexpectedly absent, or are unable to participate in class online activities, please contact me as soon as possible. To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or [drc-info@email.arizona.edu](mailto:drc-info@email.arizona.edu). If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

## **Classroom Behavior Policy**

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (i.e. texting, chatting, reading a newspaper, making phone calls, web surfing, etc.). Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.